MODELING THE 2008 MANNING STUDY FOR THE 618TH TANKER AIRLIFT CONTROL CENTER (TACC)

GRADUATE RESEARCH PROJECT

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AFIT-ILS-ENS-12-05

DEPARTMENT OF THE AIR FORCE

AIR UNIVERSITY

Air Force Institute of Technology

Wright-Patterson Air Force Base, Ohio

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Abstract

In October of 2008, a Capability-Based Manpower Standard report was released for the 618th TACC. This report described each task and its applicable man-hours for every department. Depending on how many missions are planned and the quantity of those planned missions actually executed, this would give them an idea of how many man-hours (people) they need to accomplish their mission.

For this Graduate Research Project (GRP), the main document used is the previously accomplished manpower standard from 2008. From that standard this study developed some very useful models the 618th TACC can utilize to easily determine how many people they need to continue their mission successfully. There were several man-hour equations in the 2008 study. However, without being in a useful format, it made them difficult to use and comprehend. During this study, it was determined to input all the equations in a Microsoft (MS) Excel format; therefore, all the TACC leadership had to do was insert their mission data in the applicable fields. This would then display how many people they need. The important fact to remember is these are not anyone's personal equations. This study is only using what was already put forward as the baseline.

After loading the equations into MS excel, this study added mission data from FY10, FY11, and 6 months of data from FY12 (through end of March 2012) and loaded it into the models. The models are expected to be very useful but there has to be sufficient testing to make sure before they are given to TACC leadership. The models were processed for FY10 and FY11 to see how accurate they were and then processed again for FY12 as recommended by the TACC.

Acknowledgments

I would like to express my sincere appreciation to my faculty advior, Dr. William Cunningham for his guidance and support throughout the course of the this graduate research effort.

Nathan R. Purtle

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I. Introduction

In October of 2008, a Capability-Based Manpower Standard report was released for the 618th TACC. This report described each task and its applicable man-hours for every department of this unit. Everything was based on mission planning and execution. Depending on how many missions are planned and the quantity of those planned missions actually executed, this would give them an idea of how many man-hours (people) they need to accomplish their mission.

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testing to make sure before they are given to TACC leadership. The models were processed for FY10 and FY11 to see how accurate they were and then processed again for FY12 as recommended by the TACC.

II. Literature Review

The literature review for this project was an in-depth review of the Capability-Based Manpower Standard dated 28 October 2008. Compliance with this standard is mandatory for the 618th TACC and is the basis for the study. As was stated in the overview, without useful models from this standard, it is very hard to use and make sense of this study for the leadership of the 618th TACC.

The Capability-Based Manpower Standard is broken up into seven main sections:

- Command Section
- Mobility Management (XOB)
- Command and Control (XOC)
- Global Channel Operations (XOG)
- Operations Management (XON)
- Current Operations (XOO)
- Global Readiness (XOP)

Each of these sections has their own manpower equations and therefore have a separate section in the models I built.

III. Methodology

Using the information learned in the AFIT modeling classes, this study started breaking down each section of the Capability-Based Manpower Standard for the 618th TACC. As mentioned above the standard is broken out in seven main sections. A roll-up tab was placed at the beginning so the TACC could get all the manpower numbers on one page. Afterwards the additional seven tabs are broken down and modeled separately which feed the roll-up tab with information.

Roll-Up Tab

The roll-up tab has all the essential information needed by the leadership of the TACC. At the top of the chart, there is explicit direction to only change the green sections and not to change the red sections. The red sections are the critical information that the leadership has asked AFIT to model. The green sections are the values in the linear formulas put forth in the standard. Therfore, changing the green sections according to what TACC is actually doing, will change the amount of people required to carry out the mission.

Since the Capability-Based Manpower Standard primarly uses hours required for a task and not people, this study used AFI 38-210 to determine how many hours are used to equal one person. In AFI 38-201, it states one person is based on 149.6 manhours per month. Since everything in the manpower standard is based on average monthly data, this is the exact match for the data.

Also at the top of the chart, there is a gray section showing the year of the model. In the middle left section, there is a roll up information cell showing the TOTAL

MANNING as well as the required manning for each section. To the right of that, there is a bar chart for quick reference as to how the sections are manned. In the bottom left corner (in blue), there is a cell which represents how the model compares to the actual manning that was reported for that specific year.

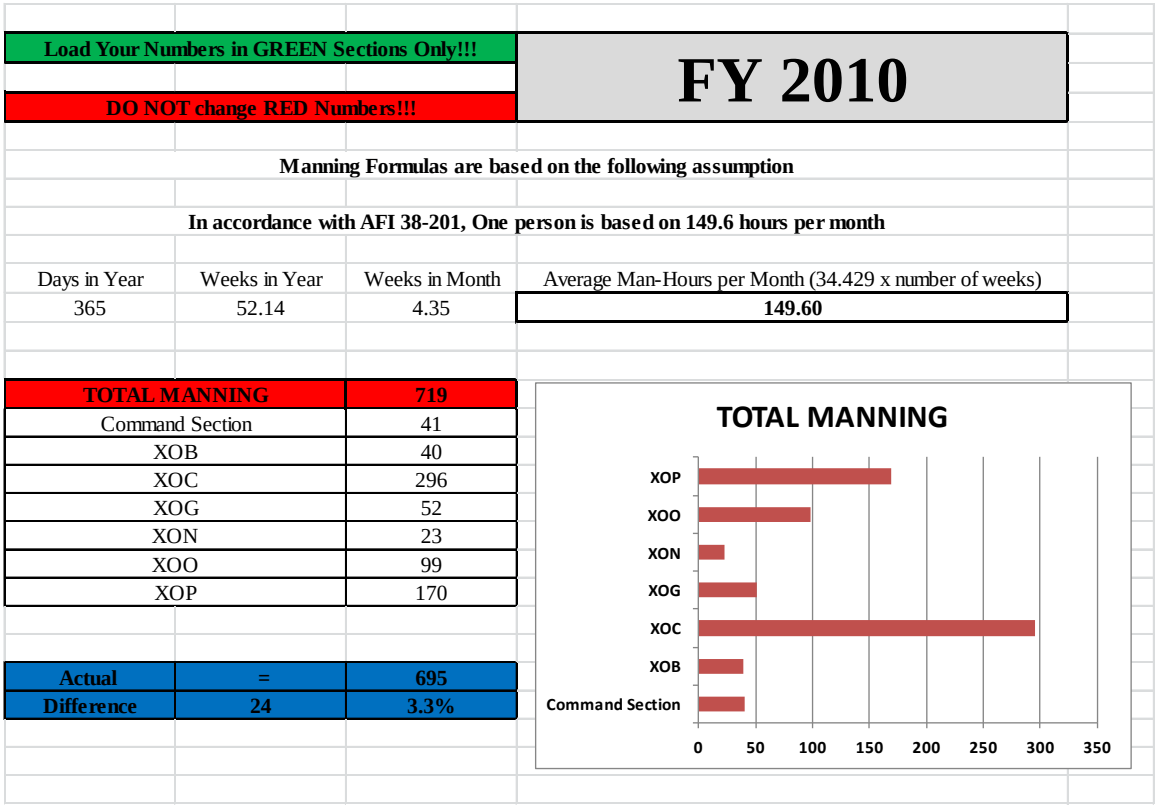


Figure 1: Roll-Up Tab

Command Section Tab

In accordance with the manning standard, the command section is a fixed number of personnel working in the front office as leadership. As you can see from Figure 2 below, there are a total of 15 people in the command section. This section also lists the leadership for five of the other sections. With the addition of the leadership positions,

this totals 41 people. (Note: the positions in green can be changed by the TACC commander if he/she feels there are too many or not enough people in these positions).

These are fixed numbers and not based on any formula		
Command Section	15	Commander (1), Vice CC (1), Technical Dir (1), Exec (2), Superintendent (1), First Sergeant (1), Info Mgr Superintendent (1), Info Mgr (4), Protocol - CAG (3)
XOB	5	Director (1), Deputy Director (1), Information Mgr (3)
XOC	5	Director (1), Deputy Director (1), Information Mgr (3)
XOG	5	Director (1), Deputy Director (1), Information Mgr (3)
XOO	4	Director (1), Deputy Director (1), Information Mgr (2)
XOP	7	Director (1), Deputy Director (1), Supervisor Air Ops (1), Information Mgr (4)
TOTAL	**41**	

Figure 2: Command Section Tab

Mobility Management Tab

The Mobility Management (XOB) tab is where the formulas begin. For example, under the section XOBA the formula used is Y1 = 3.252(X1) + 217.2. This gives us a Y intercept of 217.2 hours needed. In this formula, X1 is the average monthly number of aircraft missions flown for C-5 and C-17 aircraft. In Figure 3 below, you can see that was 1,212 monthly missions on average during FY 2010. This was a busy time going back and forth from Iraq and Afghanistan during a time of war so the average monthly number is high. Using the formula and multiplying 1212 by 3.252 and then adding 217.2, we can see in Figure 3 we need a total of 4,158.62 hours on average for one month for XOBA. Now taking that 4,158.62 and dividing it by 149.6 (the number of hours that equate to one person in accordance with AFI 38-201) we get a total of 27.80 people required for XOBA.

This study used the same methodology for sections XOBC (for C-130 aircraft) and XOBK (for KC-135 and KC-10, refueling aircraft). These sections needed a total of 3.10 people for XOBC and 9.01 people for XOBK. Adding the three sections together (27.80 + 3.10 + 9.01) there is a total of 39.91 (or 40) people needed for Mobility Management.

XOB	Mobility Management		**TOTAL MANNING**		**39.91**
XOBA	Y1 = 3.252(X1) + 217.2				
C-5 / C-17	Y Int	X1 = Aircraft Missions Flown	Mission x 3.252	**TOTAL Hrs**	**TOTAL People**
	217.2	**1212.00**	**3941.42**	**4158.62**	**27.80**
XOBC	Y2 = 3.067(X2) + 62.07				
C-130	Y Int	X2 = Aircraft Missions Flown	Mission x 3.067	**TOTAL Hrs**	**TOTAL People**
	62.07	**131.00**	**401.78**	**463.85**	**3.10**
XOBK	Y3 = 2.505(X3) + 108.6				
KC-135 / KC-10	Y Int	X3 = Aircraft Missions Flown	Mission x 2.505	**TOTAL Hrs**	**TOTAL People**
	108.6	**495.00**	**1239.98**	**1348.58**	**9.01**

Figure 3: Mobility Management (XOB) Tab

Command and Control Tab

Under Command and Control (XOC) the Capability-Based Manpower Standard breaks this section down into posts. These posts require 5 people to man them. For example, in Figure 4 below the Global Operations (XOCG) section, 18 posts are required to meet mission requirements in FY10. Taking the 18 posts required and multiplying them by 5 you can see there are 90 people required for XOCG. The same methodology is used thoughout XOC with the exception of XOCZ. This section is fixed at a manning level of 3 people in accordance with the standard.

Now taking all the sections and adding them together you can see below there are 295.5 (296) people required in the Command and Control section.

XOC	Command & Control		TOTAL MANNING	295.5
XOC / XOZ	Y1 = 4.606(X1)	Director of Ops (5)	X1 = Mission essential position needed to meet mission requirements	
Command &	Y2 = 4.606(X2)	Mission Flow Dir (5)	X2 = Mission essential position needed to meet mission requirements	
Control Policy /	Y3 = 4.606(X3)	Info Mgr (4)	X3 = Mission essential position needed to meet mission requirements	
Director of Ops	Y4 = 1	Senior Dir of Ops (1)		
	TOTAL	15		
	Posts	**4**	**TOTAL People**	**20**
XOCG	Y1 = 4.552(X1)	Contingency Officer (14)	X1 = Mission essential position needed to meet mission requirements	
Global Ops	Y2 = 4.552(X2)	Channel Officer (14)		
	Y3 = 4.552(X3)	Controller (45)	X2 = Mission essential position needed to meet mission requirements	
	Y4 = 2	Div Chief & Deputy (2)		
	Y5 = 1	Training NCO (1)	X3 = Mission essential position needed to meet mission requirements	
	TOTAL	76		
	Posts	**18**	**TOTAL People**	**90**
XOCGT	Y1 = 4.565(X1)	Air Refueling Officer (14)	X1 = Mission essential position needed to meet mission requirements	
Air Refueling Ops	Y2 = 4.565(X2)	Controller (5)		
	Y3 = 1	Section Chief (1)	X2 = Mission essential position needed to meet mission requirements	
	TOTAL	20		
	Posts	**3**	**TOTAL People**	**15**
XOCL	Y1 = 4.534(X1)	Controler (23)	X1 = Mission essential position needed to meet mission requirements	
Logistics Control	Y2 = 1	Division Chief (1)		
	TOTAL	24		
	Posts	**4**	**TOTAL People**	**20**
XOCM	Y1 = 5.091(X1)	Flt mgt Specialist (82)	X1 = Mission essential position needed to meet mission requirements	
	Y2 = 1	Division Chief (1)		
Integrated Flt Mgt	Y3 = 1	Deputy Div Chf (1)		
	Y4 = 6	Supervisory Flt Mgt Spec (6)		
	TOTAL	90		
	Posts	**16**	**TOTAL People**	**80**
XOCR	Y1 = 4.629(X1)	Deputy Dir Ops (5)	X1 = Mission essential position needed to meet mission requirements	
Theater Direct	Y2 = 4.629(X2)	Ops Planner (5)	X2 = Mission essential position needed to meet mission requirements	
Delivery	Y3 = 4.629(X3)	Controller (4)	X3 = Mission essential position needed to meet mission requirements	
	Y4 = 2	Div Chf and Deputy Div Chf (2)		
	TOTAL	16		
	Posts	**3**	**TOTAL People**	**15**
XOCX	Y1 = 4.692(X1)	Senior Controller (5)	X1 = Mission essential position needed to meet mission requirements	
	Y2 = 4.692(X2)	Junior Controller (5)		
Command Center	Y3 = 1	Division Chief (1)	X2 = Mission essential position needed to meet mission requirements	
	Y4 = 1	Reports Mgr (1)		
	TOTAL	12		
	Posts	**2.5**	**TOTAL People**	**12.5**
XOCZ	Y = 3	Division Chief (1)	Fixed Manning	
		Deputy Div Chief (1)		
		Information Mgt (1)		
	TOTAL	**3**	**TOTAL People**	**3**
XOCZD	Y1 = 4.638(X1)	Shift Supervisor (5)	X1 = Mission essential position needed to meet mission requirements	
International	Y2 = 4.638(X2)	Diplomatic Specialist (19)		
Clearance	Y3 = 1	Section Chief (1)	X2 = Mission essential position needed to meet mission requirements	
	TOTAL	25		
	Posts	**4**	**TOTAL People**	**20**
XOCZF	Y1 = 4.710(X1)	Shift Supervisor (5)	X1 = Mission essential position needed to meet mission requirements	
Flight Plans	Y2 = 4.710(X2)	Flight Planner (14)		
	Y3 = 1	Section Chief (1)	X2 = Mission essential position needed to meet mission requirements	
	Y4 = 1	Deputy Section Chief (1)		
	TOTAL	21		
	Posts	**4**	**TOTAL People**	**20**

Figure 4: Command and Control (XOC) Tab

Global Channel Operations Tab

Under the Global Channel Operations (XOG) tab, there are several linear equations to work through. The example given here is the East Channel Operations (XOGE) section. The equation is Y = 90.10 + .5940(X1) + .1325 (X2) + 112.1, where X1 is the total average monthly number of east channel missions and X2 is the total average monthly number of east channel sorities. In the data I received from TACC they chose to only provide me the number of missions and not break the information down into missions and sorities. That is why X2 is 0 under XOGE and XOGW, TACC did not give me data for X2.

Using the data given there were an average number of 163.5 east missions every month in FY 10. Taking the 163.5 and multiplying it by .5940 and then adding it to the other numbers we get a total of 299.32 hours required. Taking the 299.32 hours and dividing that by the 149.60 (hours per man) as seen below in Figure 5 there is a total of 2.00 people required for East Channel Operations (XOGE).

The only exception to the equations in XOG is section XOGX, which is very similar to XOC, where it is broken up into posts. This section required 4 posts or 20 people to man that section.

After working all the formulas and adding all the required sections manning together there is a total of 51.57 (52) people required to man Global Channel Operations.

XOG	Global Channel Operations		**TOTAL MANNING**		**51.57**		
XOGC Commercial Channel Missions	Y = 532.7 + 25.14(X1) + 1.252(X2) + 1.745(X3) + .3216(X4) + .04272(X5) + .04081(X6) + .4704(X7) + 107.2	X1 = Validated Commercial Channels Supported					
		X2 = Average Monthly Commercial Channel Missions					
		X3 = Average Monthly OSA Passengers Booked					
		X4 = Average Monthly Cooperative Airlift Agreement Passengers Booked					
		X5 = Average Monthly Duty Passengers Booked					
		X6 = Average Monthly Pets Booked					
		X7 = Averave Monthly Channel Missions					
Y Intercept	X1	X2	X3	X4	X5	X6	X7
	13.58	**287.33**	**215.00**	**33.00**	**14730.08**	**634.58**	**547.17**
639.90	341.49	359.74	375.18	10.61	629.27	25.90	257.39
		TOTAL Hrs	**2639.47**		**TOTAL People**		**17.64**
XOGD Analysis & Development Div	Y = 10	**Fixed at 10 People**			**TOTAL People**		**10**
XOGE East Channel Ops	Y = 90.10 + .5940(X1) + .1325(X2) + 112.1	X1 = Total Number of East Channel Missions					
		X2 = Total Number of East Channel Sorties					
	Y Intercept	X1	X2	**TOTAL Hrs**	**299.32**		
		163.5	**0**				
	202.20	97.119	0		**TOTAL People**		**2.00**
XOGW West Channel Ops	Y = 104.4 + .5952(X1) + .2064(X2) + 101.4	X1 = Total Number of West Channel Missions					
		X2 = Total Number of West Channel Sorties					
	Y Intercept	X1	X2	**TOTAL Hrs**	**288.48**		
		138.92	**0**				
	205.80	82.68	0		**TOTAL People**		**1.93**
XOGX	**XOGX is the same as XOC and done in Posts - 1 Post = 5 People**						
		Posts	4		**TOTAL People**		**20**

Figure 5: Global Channel Operations (XOG) Tab

Operations Management Tab

As shown in Figure 6 below, Operations Management (XON) is broken down into a combination of several fixed manning cells and several very long linear equations. This paper won't go through each equation listed, although it will highlight section XONI. In XONI, the equation has an X1, which is the number of aircraft with a ten digit dial number. This information comes from paragraph A6.4.4.1 on page 144 of the Capability-Based Manpower Standard. However, during this study there was no one at TACC who

could provide this data point. It is highlighted in yellow because it is estimated at 20.00 and not a true number given by TACC.

After working all the equations and adding all the required sections manning together, there is a total of 22.56 (23) people required to man Operations Management.

XON	Operations Management		**TOTAL MANNING**		**22.56**		
XON Operations Mgt	Directorate	Director (1), Deputy Dir (1), Deputy Dir of Ops & Info (1), Secretary (1), Ops Staff Officer (1), Info Mgr (2)					
	Fixed at 7 People				**TOTAL People**		**7.00**
XONC Business Center	**Fixed at 1 Person**	Division Chief (1)			**TOTAL People**		**1.00**
XONF Executive Decisions Support	Y1 = 37.76 + .85(X1) + 3.042(X2) + 2.861(X3) + 3.056(X4) Y2 = 2.683(X3 + X5 + X6) Y3 = 1.565(X3 + X4 + X5 + X6) Y4 = 0.1858(X2 + X3 + X4 + X5 + X6)	X1 = Average Video Teleconferences (VTC) (New, Modified or Cancelled) X2 = Average VTCs Conducted (New and Modified) X3 = Average Operations Summary (OPSUM) Briefings supported per month X4 = Average Miscellaneous Briefings / Presentations Supported per month X5 = Average GRACC Briefings Supported per month X6 = Average Mission Briefings Supported per month					
	Y1 Intercept	X1	X2	X3	X4		
		23.65	**21.75**	**22.00**	**48.00**		
	37.76	20.10	66.16	62.94	146.69		
		Total Hrs	**333.656**		**Total People**		**2.23**
	Y2 Total Hrs 205.35682	X3	X4	X5			
		22.00	**48.00**	**6.54**	**TOTAL People**		**1.37**
	Y3 Total Hrs 147.1726	**X3**	**X4**	X5	**X6**		
		22.00	**48.00**	**6.54**	**17.50**		
					TOTAL People		**0.98**
	Y4 Total Hrs 21.513782	X2	X3	X4	X5	X6	
		21.75	**22.00**	**48.00**	**6.54**	**17.50**	
					TOTAL People		**0.14**
				TOTAL MANNING For XONF			**4.73**
XONI Integration Division	Y1 = 242.3 + .7943(X1)	X1 = # of A/C with 10-Digit Dial Number					
	Y1 Intercept	X1					
		20.00					
	242.30	15.89	**Total Hrs**	**258.19**	**TOTAL People**		**1.73**
XONR Resources	Y = 871.1 + .7973(X1) + .07144(X2) + .06730(X3) + .07134(X4)	X1 = Authorized Civilians for 618 TACC, 18 AF, and 15 OWS X2 = Authorized Active Officers for 618 TACC and 18 AF X3 = Authorized Active Military and Civilians for 618 TACC X4 = Authorized Military, Civilian and Contractors for 618 TACC (includes ARC Forces)					
	Y Intercept	X1	X2	X3	X4		
		281.00	**174.00**	**688.00**	**809.00**		
	871.10	224.04	12.43	46.30	57.71		
		Total Hrs	**1211.59**		**TOTAL People**		**8.10**

Figure 6: Operations Management (XON) Tab

Current Operations Tab

Under the Current Operation (XOO) section there is again several sections with a mixture of fixed manning and linear equations to work through to see how many people are required. The different sections and how their equations are worked to get to the total manning required are shown in Figure 7 below.

After working all the equations and adding all the required sections manning together, there is a total of 98.52 (99) people to man the Current Operations.

XOO	Current Operations		**TOTAL MANNING**		**98.52**	
XOOK	Y = 42.99(X1) +	X1 = Average Monthly Coronet AR Missions Planned				
AR Ops Division	2.375(X2) +	X2 = Average Monthly Validated New Requirement AR Missions Planned				
	8.941(X3) + 309.7	X3 = Average Monthly Validated Homeland Defense AR Missions Planned				
	Y Intercept	X1	X2	X3		
		107.00	**553.00**	**120.00**	**Total Hrs**	
	309.70	4599.93	1313.38	1072.92	**7295.93**	
				TOTAL People		**48.77**
XOOO	Y = 39.88(X1) +	X1 = Validated Special Assignment Airlift Missions Planned				
Special Assignment Airlift	3.273(X2) +	X2 = Validated Special Assignement Missions Managed				
Missions Division	73.18(X3) + 309.7	X3 = Validated Executive Airlift Missions Planned				
	Y Intercept	X1	X2	X3		
		54.60	**230.10**	**10.40**	**Total Hrs**	
	309.70	2177.45	753.12	761.07	**4001.34**	
				TOTAL People		**26.75**
XOOL	Y = 4	Division Chief (1), Loadmaster (2), Info Mgt (1)				
Special Activities Division	**Fixed at 4 People**			**TOTAL People**		**4**
XOON	Y = 8	Division Chief (1)		In-Flight Refueling (2)		
Task Force 294 Division		Material Mgt (1)		Material mgt (1)		
		Logistics Plans (1)		Aerospace Mx (2)		
	Fixed at 8 People			**TOTAL People**		**8**
XOOS	Y = 11	Division Chief (1)		Communications and information (1)		
Special Missions		Mobility Pilot (3)		Operations Staff Officer (1)		
Management Division		Mobility Nav (4)		Information Mgt (1)		
	Fixed at 11 People			**TOTAL People**		**11**

Figure 7: Current Operations (XOO) Tab

Global Readiness Tab

The last tab in the model is Global Readiness (XOP). Under this tab, there are again a mixture of fixed manning and several linear equations to work through. XOP is the second largest section behind XOC.

For example, under XOP, this paper will look at at the Contingency Division (XOPC). As shown in Figure 8 below, the equation for this section is Y2 = 8.829(X1) + 297.4, where X1 is the average monthly AMC Missions executed by Global Operations Division broken out by mission class and aircraft type. After gathering data from TACC, this study found this average monthly number for FY10 was 1,519. So multiplying 1,519 by 8.829 and then adding 297.4, the result is 13,708.65 hours required to perform this task on a monthly basis. Dividing the 13,708.65 by 149.60 (man hours per month) shows 91.63 (92) people required to cover the Contingency Division.

After working all the equations and adding all the required sections manning together, there is a total of 169.74 (170) people required to man Global Readiness Division.

XOP	Global Readiness		**TOTAL MANNING**		**169.74**	
XOPA	Y1 = 566.8 + 3.991(X1) +	X1 = Average monthly Deployment Tasking Messages				
Aeromedical Evac	1.835(X2) + 2.495(X3) + 247.9	X2 = Average monthly AMC AE Sorties Flown				
	Y2 = 4.534(X4)	X3 = Average monthly AMC AE Missions Executed				
	Y3 = 4.756(X5)	X4 = AE Execution Cell approved posts, Senior Controller				
	Y4 = 1	X5 = AE Execution Cell approved posts, Controller functions				
	Y1	X1	X2	X3	**Hours**	
	Intercept	**3.75**	**326.00**	**117.00**		
	814.70	14.97	598.21	291.92	**1719.79125**	
	Y2	X4	**1.00**		**4.53**	
	Y3	X5	**1.00**		**4.76**	
	Y4 = Fixed at 1				**1**	
		Total Hrs	**1729.08125**	**TOTAL People**		**3.89**
XOPAC		Section Chief (1), Medical Service Ceaftsman (5), Flight Nurse (5)				
Aeromedical Evac	**Fixed at 11 People**			**TOTAL People**		**11**
XOPC	Y2 = 8.829(X1) + 297.4	X1 = Average monthly AMC Missions executed by Global Ops Division broken out by mission class and aircraft type				
Contingency Div						
	Y2	X1				
	Intercept	**1519.00**	**Total Hrs**			
	297.40	13411.25	**13708.65**	**TOTAL People**		**91.63**
XOPE	Y3 = 23.04(X1) + 128.9	X1 = Average monthly AMC Exercise/SAAM missions executed				
Exercise Division						
	Y3	X1				
	Intercept	**50.00**	**Total Hrs**			
	128.90	1152.00	**1280.90**	**TOTAL People**		**8.56**
XOPM	Y4 = 730.5 + 4.276(X1) + 3.813(X2) + 297.4	X1 = Average monthly AMC Contingency & Exercise missions executed by Global Ops Division broken out by mission class and aircraft type				
Mission Support Div		X2 = Average monthly AMC executed JA/ATT missions supported by Mission Coordinator & Mobile Command and Control Branches				
	Y4	X1	X2			
	Intercept	**1570.00**	**114.00**	**Total Hrs**		
	1027.90	6713.32	434.68	**8175.902**		
				TOTAL People		**54.65**

Figure 8: Global Readiness (XOP) Tab

IV. Analysis

The primary way to analyze the models and determine their accuracy was to compare them against prior years actual manning data. The first step was to compare what the model says they actually should have to what they actually had. After building the models, based on the Capability-Based Manpower Standard, TACC was asked for the manning data from FY10 and FY11. They were also asked for the additional data to fill in the models for those years.

Looking back to Figure 1: Roll-Up Tab on page 6, there was a small blue cell added onto this page to represent the accuracy of the model. For FY10, the manning documents provided by TACC showed their actual manning was 695. After gathering all the data and running the model, it showed for FY10 the manning required was 719. This is a difference of 24 or 3.3%.

The same analysis was performed for FY11. The manning documents provided by TACC showed their actual manning was 715. After gathering all the data and running the model, it showed for FY11 the manning required was 736. This is a difference of 21 or 2.8%.

After these two in-depth tests, the assumption was made the models were right on target and therefore ran again to find what FY12 should be. Provided below in Figure 9 is the Roll-Up Tab for the 2012 data. After running the models, the manning came out to be 670 people required for TACC. Since both FY10 and FY11 were approximately 3% high, this study concludes the same for FY12 and recommend the actual number required would be around 650 people.

Load Your Numbers in GREEN Sections Only!!!			**FY 2012**
DO NOT change RED Numbers!!!			
Manning Formulas are based on the following assumption			
In accordance with AFI 38-201, One person is based on 149.6 hours per month			
Days in Year	Weeks in Year	Weeks in Month	Average Man-Hours per Month (34.429 x number of weeks)
365	52.14	4.35	**149.60**

TOTAL MANNING	**670**
Command Section	41
XOB	32
XOC	303
XOG	53
XON	22
XOO	81
XOP	138

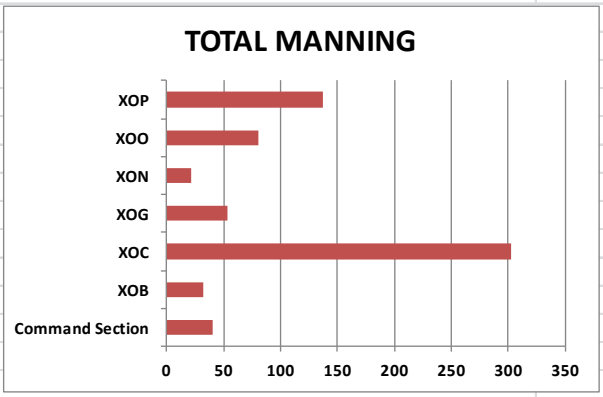


Figure 9: Roll-Up Tab 2012

V. Discussion

Over the past several years, budget constraints have resulted in numerous manning cuts and in the coming years, it is assumed more duty positions will be eliminated. This study is a great tool to compute approximate manning levels under the current structure of TACC. This model will show how much manning can be cut and how it can still maintain efficient coverage of the mission. These are great analytical tools that should be used when making these manning decisions. However, once changes are put in place and cuts have been determined, I recommend another full manning study to be performed to ensure the accurate level of manning is in place for TACC.

There are several more parts of this study being performed by Dr. Ahner and his group to find more efficiencies for TACC. Once this study or any other means of finding efficiencies is complete and in place, it would be a great idea to revisit the 2008 manpower standard to ensure manning levels are sufficient for TACC.

In conclusion, the models built from this study are completely accurate and highly useful. It is recommend TACC use these models to help them in determining how much manning is required to carry out their mission. These models are not the only tools leadership can use when making manning decisions, although they will be an outstanding addition to their 'tool bag' when adding or reducing manning, or to defend cuts mandated from above.

Bibliography

Capability-Based Manpower Standard, 28 October 2008, 618th Tanker Airlift Control Center, https://www.afma.randolph.af.mil

Air Force Instruction 38-201, 26 September 2011, Management of Manpower Requirements and Authorizations, http://www.e-publishing.af.mil

Appendix A: Input Data From TACC

XOB		FY 10 Monthly Average	FY 11 Monthly Average	FY 12 Monthly average
XOBA				
C-5 / C-17 Missions Flown		1,212	1,105	1,007
XOBC				
C-130 Missions Flown		131	88	70
XOBK				
KC-135 / KC-10 Missions Flown		495	676	354

XOC		FY 10 Monthly Average	FY 11 Monthly Average	FY 12 Monthly average
XOC / XOZ	# of Posts Required	**4**	**4**	**4**
*4 posts are XOZ				
XOCG	# of Posts Required	18	20	19
XOCGT	# of Posts Required	3	3	2.5
XOCL	# of Posts Required	4	5	5
XOCM	# of Posts Required	16	16	16
XOCR	# of Posts Required	3	3	3
XOCX	# of Posts Required	2.5	2.5	2.5
*just moved to A3C				
XOCZ	# of Posts Required	*total below two figures (8)	8	8
XOCZD	# of Posts Required	4	4	4
XOCZF	# of Posts Required	4	4	4

XOG	FY 10 Monthly Total	FY 11 Monthly Total	FY 12 Monthly Total
Validated Channels Supported	163	118	114
Commercial Channel Missions (Passenger/Cargo)	3448	3404	1802
OSA Passengers Booked	2580	888	1248
Cooperative Airlift Agreement Passengers Booked	396	468	504
Duty Passengers Booked	176761	201777	100435
Pets Booked	7615	7886	4630
Total Worldwide Channel Missions	6566	5973	2887
Number of East CONUS Out Channel Missions	1962	1856	911
Number of East Channel Sorties			
Number of West CONUS Out Channel Missions	1667	1593	793
Number of West Channel Sorties			
# of Logbook Entries	4039	7146	3094

XON	FY 10 Monthly Average	FY 11 Monthly Average	FY 12 Monthly average
XONF			
Video Teleconferences (VTC) (New, Modified or Cancelled)	23.65	13.92	14.03
VTCs Conducted (New and Modified)	21.75	12.66	12.83
Operations Summary (OPSUM) Briefings supported	22	22	22
Miscellaneous Briefings / Presentations Supported	48	31	39
GRACC Briefings Supported	6.54	10.45	12
Mission Briefings Supported	17.5	15.75	12.5
XONI			
# of A/C with 10-Digit Dial Number			
XONR			
Authorized Civilians for 618 TACC, 18 AF, and 15 OWS	281	296	312
Authorized Active Officers for 618 TACC and 18 AF	174	174	176
Authorized Active Military and Civilians for 618 TACC	688	698	705
Authorized Military, Civilian/Contractors for 618 TACC (includes ARC Forces)	809	825	832

XOO	FY 10 Monthly Average	FY 11 Monthly Average	FY 12 Monthly average
XOOK			
Coronet AR Missions Planned	107	94	66
Validated New Requirement AR Missions Planned	553	709	327
Validated Homeland Defense AR Missions Planned	120	157	113
XOOO			
Validated Special Assignment Airlift Missions Planned	54.6	55.1	56.3
Validated Special Assignement Missions Managed	230.1	210.4	175.3
Validated Executive Airlift Missions Planned	10.4	7.1	8.3

XOP	FY 10 Monthly Average	FY 11 Monthly Average	FY 12 Monthly average
XOPA			
Deployment Tasking Messages	3.75	2	1.42
AMC AE Sorties Flown	326	322	314
AMC AE Missions Executed	117	120	109
AE Execution Cell approved posts, Senior Controller	1	1	1
AE Execution Cell approved posts, Controller functions	1	1	1
XOPC			
AMC Missions executed by Global Ops Division	1,519	1,614	1,211
XOPE			
AMC Exercise/SAAM missions executed	50	36	24
XOPM			
AMC Contingency & Exercise missions executed by Global Ops Division	1,570	1,650	1,235
AMC executed JA/ATT missions supported by Mission Coordinator & Mobile Command and Control Branches	114	113	107

MODELING THE 2008 MANNING STUDY FOR THE 618TH TANKER AIRLIFT CONTROL CENTER (TACC)

The AFIT of Today is the Air Force of Tomorrow.

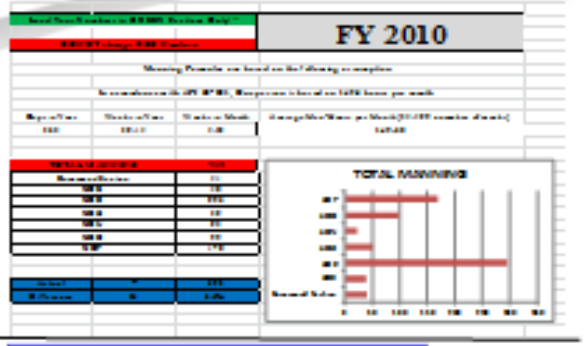
Major Nathan R. Purtle
Department of Operational Sciences (ENS)

ADVISOR
Dr. William Cunningham

Research Focus:

- Building useful models for the leadership of TACC to be able to determine the amount of manning needed to accomplish their mission
- The models will also be very useful for further research by AFIT during further manning studies

Methodology: Manning Models



Results:

- FY10 TACC actual manning – 695, models I built showed 719 needed. Difference of 24 or 3.3%.
- FY11 TACC actual manning – 715, models I built showed 736 needed. Difference of 21 or 2.8%.
- FY12 – After running my models I came up with 670 people needed. Since my previous two years were about 3% high I think the real number is about 650.

Recommendations:

- TACC use the models to set current manning levels
- AFIT use the models to help in determining where to save manning for TACC

Sponsor: AFMC/A10

Appendix C. Vita

Vita

Major Nathan R. Purtle enlisted in the Air Force in 1986 and served as an aircraft communication and navigation specialist for 14 years. He completed Officer Training School and was commissioned in September 2000 and is fully qualified Level III in acquisitions. Major Purtle has experience in Air Logistics Centers managing the KC-135 Global Air Traffic Management effort. He has also worked in the Aeronautical Systems Center managing the night vision program for F-15, F-16 and F-18 aircraft. The last program he managed prior to entering AFIT was upgrades for the F-22 Raptor aircraft. He has had four deployments to Iraq and Saudi with the latest coming in 2010 when he returned from a seven month tour to Mosul Iraq where he worked with the Defense Contract Management Agency. Major Purtle is married to the former Dawn Collier and has two sons Nicholas and Tyler and one daughter Samantha.

Appendix D: Form 298

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 074-0188
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to an penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.			
1. REPORT DATE *(DD-MM-YYYY)* 06-14-2012	2. REPORT TYPE **Graduate Research Project**		3. DATES COVERED *(From – To)* Jun 2011 – June 2012
4. TITLE AND SUBTITLE **MODELING THE 2008 MANNING STUDY FOR THE 618TH TANKER AIRLIFT CONTROL CENTER (TACC)**			5a. CONTRACT NUMBER 5b. GRANT NUMBER 5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S) Major Nathan R. Purtle			5d. PROJECT NUMBER 5e. TASK NUMBER 5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/EN) 2950 Hobson Street, Building 642 WPAFB OH 45433-7765			8. PERFORMING ORGANIZATION REPORT NUMBER AFIT-ILS-ENS-12-05
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) 618th Tanker Airlift Control Center (TACC) 402 Scott Drive, Scott AFB IL 62225-5303 Attn: Lt Col Kathryn Russel DSN 576-3643, Comm 618-256-3643 email: Kathryn.russel@us.af.mil			10. SPONSOR/MONITOR'S ACRONYM(S) 11. SPONSOR/MONITOR'S REPORT NUMBER(S)
12. DISTRIBUTION/AVAILABILITY STATEMENT Distribution Statement A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.			
13. SUPPLEMENTARY NOTES			
14. ABSTRACT In October of 2008, a Capability-Based Manpower Standard report was released for the 618th TACC. This report described each task and its applicable man-hours for every department. Depending on how many missions are planned and the quantity of those planned missions actually executed, this would give them an idea of how many man-hours (people) they need to accomplish their mission. For this Graduate Research Project (GRP), the main document used is the previously accomplished manpower standard from 2008. From that standard this study developed some very useful models the 618th TACC can utilize to easily determine how many people they need to continue their mission successfully. There were several man-hour equations in the 2008 study. However, without being in a useful format, it made them difficult to use and comprehend. During this study, it was determined to input all the equations in a Microsoft (MS) Excel format; therefore, all the TACC leadership had to do was insert their mission data in the applicable fields. This would then display how many people they need. The important fact to remember is these are not anyone's personal equations. This study is only using what was already put forward as the baseline. After loading the equations into MS excel, this study added mission data from FY10, FY11, and 6 months of data from FY12 (through end of March 2012) and loaded it into the models. The models are expected to be very useful but there has to be sufficient testing to make sure before they are given to TACC leadership. The models were processed for FY10 and FY11 to see how accurate they were and then processed again for FY12 as recommended by the TACC.			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF: a. REPORT: U; b. ABSTRACT: U; c. THIS PAGE: U	17. LIMITATION OF ABSTRACT: UU	18. NUMBER OF PAGES: 31	19a. NAME OF RESPONSIBLE PERSON Dr. William Cunningham (ENS) 19b. TELEPHONE NUMBER *(Include area code)* (937) 255-3636, ext 4283; e-mail: William.cunningham@afit.edu

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